

REMARKS

The February 18, 2009 Office Action was based upon pending Claims 1-8, 10-15, 17-22 and 27-31. This Amendment amends Claims 1, 10, 17, 27, 28, and 30. Thus, after entry of this Amendment, Claims 1-8, 10-15, 17-22 and 27-31 are pending and presented for further consideration.

ISSUES RAISED IN THE OFFICE ACTION

The Office Action rejected Claims 1-8, 10-15, 17-22 and 27-31 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,748,669 to Klayman (hereinafter "Klayman"), in view of U.S. Patent No. 5,832,438 to Bauer (hereinafter "Bauer").

In addition, the Office Action provisionally rejected Claims 27-31 on the grounds of non-statutory obviousness-type double patenting as being unpatentable over Claim 1 of co-pending Application No. 11/777,127 in view of Bauer.

REJECTION OF CLAIMS 1-8, 10-15, 17-22 AND 27-31 UNDER 35 U.S.C. §103(A)

The Office Action rejected Claims 1-8, 10-15, 17-22 and 27-31 under 35 U.S.C. §103(a) as being unpatentable over Klayman in view of Bauer.

Claim 1

Claim 1 differs from the cited references for a number of reasons. For example, in the system of Claim 1, bass components are filtered from first and second inputs. These filtered bass components are then added back to create enhanced output signals. Second, the system uniquely spectrally shapes difference information occurring in the first and second inputs. Third, after spectrally shaping the difference information, the system combines the spectrally shaped difference information with the filtered bass components to create the enhanced outputs.

Each of these differences is discussed in further detail below.

Adding Filtered Bass Components Back In

The system of Claim 1 comprises a first high-pass filter which receives first audio information on a right input. The first high-pass filter configured to filter a first set of bass components in the right input relative to other frequencies to create first filtered audio information. As a result of the filtering, the first set of bass components in the right input are removed in the first filtered audio information.

Likewise, a second high-pass filter creates second filtered audio information by filtering a second set of bass components in a left input.

A difference circuit then identifies difference information in the first and second filtered audio information and an equalizer then spectrally shapes the difference information to create processed difference information.

A summing circuit then adds the first set of bass components back in by combining at least a portion of the first set of bass components (that were filtered out) with the processed difference information. ***This creates an enhanced first output that comprises at least a portion of the first set of bass components that were removed by the first high-pass filter and at least a portion of the processed difference information.***

A summing circuit also adds the second set of bass components back in by combining at least a portion of the second set of bass components (that were filtered out) with the processed difference information. ***This creates an enhanced second output that comprises at least a portion of the second set of bass components that were removed by the second high-pass filter and at least a portion of the processed difference information.***

While Klayman describes two subsonic filters 412 and 414 that filter bass components, Klayman does not add the filtered based components back in. For instance, Klayman describes a mixer 425 that receives Lin, Rin, a sum signal and a difference signal. The bass components, however, have been filtered out of each of these signals. Thus, the filtered base components are not added back in.

Likewise, Bauer fails to describe the concept of adding filtered bass components back in to create an enhanced output signal.

Thus, even if we assume that Klayman and Bauer can be combined, the combination of these two references do not teach the concept of filtering an input signal of bass components and then adding at least a portion of the bass components back in.

Unique Spectral Shaping Of The Difference Information

In addition, the system of Claim 1 performs unique spectral shaping of the difference information. Applicant agrees with the Examiner that the spectral shaping of Klayman is different than the spectral shaping set forth in Claim 1.

Applicant, however, differs with the combination of Bauer with Klayman. Bauer does not identify difference information whatsoever. Instead, Bauer shapes each input independently. This is much different than spectrally shaping only the difference information existing in two signals. Furthermore, there is no teaching whatsoever in Bauer that the spectral shaping of a single signal, could be applied to the difference information existing in two signals.

Even if Bauer could be combined with Klayman, which it cannot, Bauer does not teach a mid-gain of approximately one-half the difference between the maximum gain and the minimum gain. Thus, the combination of Bauer and Klayman fail to teach the unique spectral shaping of Claim 1.

Adding Filtered Bass Components After Shaping The Difference Information

In addition, the system of Claim 1 adds a portion of the filtered bass components in a specific way – after spectrally shaping the difference information.

Neither Klayman, nor Bauer, either alone, or in combination, teach the adding of the filtered bass components back in, let alone after the spectral shaping of the difference information.

In Bauer, once each signal is individually spectrally shaped, each signal is directly feed to the audio connector. Thus, Bauer does not describe or teach any

circuitry for adding filtered bass components to the each of the spectrally shaped signals.

In Klayman, once the bass components in the input signals are filtered, no portions of the filtered bass components are added back in. To do so, one would have to alter Klayman to add inputs to the mixer 425. As illustrated in Klayman at Figures 2, 4, 6, and 10 the mixers do not have additional inputs for receiving any portion of the filtered bass components.

Thus, the combination of Klayman and Bauer fail to teach the concept of adding the filtered bass components back in after spectrally shaping the difference information.

The Examiner Has Not Presented a Prima Facie Case of Obviousness

In view of the arguments set forth herein, Appellant submits that Claim 1 is patentable over the cited references based on at least the following elements:

- 1) adding filtered bass components back in;
- 2) unique spectral shaping of the difference information; and
- 3) adding filtered bass components after shaping the difference information.

Thus, in order to establish a prima facie case of obviousness for the pending claims, the Examiner must present, inter alia, references that when combined have each and every claim limitation. However, none of cited references even when combined suggests such limitations. Accordingly, Applicant respectfully contends that the Examiner has failed to provide adequate articulation of reasoning to support the legal conclusion of obviousness.

Therefore, Applicant respectfully requests allowance of Claim 1.

Claims 2-8

Claims 2-8 depend from Claim 1 and are believed to be patentable for the same reasons articulated above with respect to Claim 1, and because of the additional features recited therein.

Claim 10

Independent Claim 10 is of different scope than the other independent claims and Applicant requests the Examiner to separately evaluate the patentability of Claim 10 in light of the arguments set forth below.

In particular, Claim 10 is directed to an apparatus for enhancing sound. The apparatus comprises a first high-pass filter which receives first audio information on a first input. The first high-pass filter is configured to filter a first set of bass components from the first audio information to create first filtered information. The first set of bass components have been filtered from the first audio information.

Claim 10 also comprises a second high-pass filter which receives second audio information on a second input. The second high-pass filter is configured to filter a second set of bass components from the second audio information to create second filtered audio information. The second set of bass components have been filtered from the second audio information;

In addition, Claim 10 comprises a difference circuit in communication with the first and second high-pass filters. The difference circuit is configured to identify the difference information in the first and second filtered audio information.

Furthermore, Claim 10 comprises an equalizer in communication with the difference circuit. The equalizer is configured to spectrally shape the difference information.

Still further, Claim 10 comprises a summing circuit in communication with the equalizer and the first input and the second input. The summing circuit is configured to combine the spectrally shaped difference information with the first set of bass components that were filtered by the first high-pass filter from the first audio information on the first input to generate a first output. The first output comprising at least a portion of the first set of bass components filtered by the first high-pass filter and at least a portion of the spectrally shaped difference information.

The summing circuit is further configured to combine the spectrally shaped difference information with the second set of bass components that were filtered from the second audio information by the second high-pass filter to generate a second output. The second output comprising at least a portion of the second set of bass components filtered by the second high-pass filter and at least a portion of the spectrally shaped difference information.

Also, in Claim 10, the difference information is spectrally shaped by the equalizer by applying a perspective curve characterized by a maximum gain within a first frequency range of 100 to 150 Hz and the curve characterized by a minimum gain within a second frequency range of 1680 to 2520 Hz. The curve decreases at a rate of approximately 6 decibels per octave below the first frequency range and above the first frequency range towards the second frequency range. The curve further increases at a rate of approximately 6 decibels per octave above the second frequency range.

Because Klayman and Bauer fail to teach these concepts, Applicant respectfully submits that amended Claim 10 is patentably distinct and Applicant respectfully requests allowance of Claim 10.

Claims 11-15

Claims 11-15 depend from Claim 10 and are believed to be patentable for the same reasons articulated above with respect to Claim 10, and because of the additional features recited therein.

Claim 17

Independent Claim 17 is of different scope than the other independent claims and Applicant requests the Examiner to separately evaluate the patentability of Claim 17 in light of the arguments set forth below.

In particular, Claim 17 is directed to an apparatus for enhancing sound. The apparatus comprises a first input and a second input wherein the first and second inputs comprise first and second audio information with bass components and other frequencies.

Claim 17 also comprises at least one filter that filters a first set of bass components from the first input and a second set of bass components from the second input.

In addition, Claim 17 comprises a difference circuit configured to identify difference information in the first and second inputs. At least a portion of the bass components in the first and second inputs are removed from the difference information.

Furthermore, Claim 17 comprises an equalizer configured to spectrally shape the difference information in the first and second inputs. The difference information is spectrally shaped by the equalizer by applying a perspective curve characterized by a maximum gain within a first frequency range of 100 to 150 Hz and the curve characterized by a minimum gain within a second frequency range of 1680 to 2520 Hz. The curve decreases at a rate of approximately 6 decibels per octave below the first frequency range and above the first frequency range towards the second frequency range. The curve further increases at a rate of approximately 6 decibels per octave above the second frequency range, wherein the equalizer does not spectrally shape the first and second sets of bass components filtered by the filter;

Claim 17 also comprises a summing circuit that is configured to combine the spectrally shaped difference information with at least a portion of the first set of bass components that were filtered by the filter to generate a first output. The first output comprising at least a portion of the first set of bass components that were filtered by the filter and the spectrally shaped difference information.

The summing circuit is further configured to combine the spectrally shaped difference information with at least a portion of the second set of bass components that were filtered by the filter to generate a second output. The second output comprising at least a portion of the second set of bass components filtered by the filter and the spectrally shaped difference information.

Neither Klayman, nor Bauer, either alone or in combination teach these concepts. Accordingly, Applicant respectfully submits that amended Claim 17 is

patentably distinct from the cited references and Applicant respectfully requests allowance of Claim 17.

Claims 18-22

Claims 18-22 depend from Claim 17 and are believed to be patentable for the same reasons articulated above with respect to Claim 17, and because of the additional features recited therein.

Claim 27

Independent Claim 27 is of different scope than the other independent claims and Applicant requests the Examiner to separately evaluate the patentability of Claim 27 in light of the arguments set forth below.

In particular, Claim 27 is directed to a method for enhancing sound. The method comprises receiving at least a first input and a second input. The first input comprises at least a first set of bass components and a first set of other frequencies. The second input comprises at least a second set of bass components and a second set of other frequencies.

The method of Claim 27 also comprises filtering the first and second bass components in the first and second inputs.

In addition, Claim 27 comprises spectrally shaping difference information in the first and second inputs wherein at least a portion of the first and second bass components have been filtered, wherein spectrally shaping the difference information boosts the amplitudes of the second set of frequencies.

Furthermore, Claim 27 comprises combining the spectrally shaped difference information with at least a portion of the first set of bass components in the first input to generate a first output. The first output comprises at least a portion of the first set of bass components that were filtered by the filter and the spectrally shaped difference information.

Claim 27 also comprises combining the spectrally shaped difference information with at least a portion of the second set of bass components in the second input to generate a second output. The second output comprises at least a portion of the second set of bass components that were filtered by the filter and the spectrally shaped difference information.

Spectrally shaping the difference information further reduces the amplitudes of a third set of frequencies relative to the amplitudes of the second set of frequencies. The third set of frequencies occurring at higher frequencies than the second set of frequencies. Also a maximum reduction of the amplitudes of the third set of frequencies occurs at approximately 2.1 kilohertz.

Because the cited references fail to teach these concepts, Applicant respectfully submits that Claim 27 is patentably distinct, and therefore, Applicant respectfully requests allowance of Claim 27.

Claim 28

Independent Claim 28 is of different scope than the other independent claims and Applicant requests the Examiner to separately evaluate the patentability of Claim 28 in light of the arguments set forth below.

In particular, Claim 28 is directed to a method for enhancing sound. The method comprises receiving at least a first input and a second input. The first and second inputs comprise at least a first set of bass components and a second set of other frequencies. The method of Claim 28 also comprises filtering the first set of bass components in the first input.

In addition, Claim 28 comprises spectrally shaping difference information in the first and second inputs. Spectrally shaping the difference information boosts the amplitudes of the second set of frequencies.

Furthermore, Claim 28 comprises combining the spectrally shaped difference information with at least a portion of the first set of bass components filtered in the first

input to generate an output. The output contains the spectrally shaped difference information and the portion of the first set of bass components filtered in the first input.

Spectrally shaping the difference information further reduces the amplitudes of a third set of frequencies relative to the amplitudes of the second set of frequencies. The third set of frequencies occurring at higher frequencies than the second set of frequencies. Also, spectrally shaping the difference information further boosts the amplitudes of a fourth set of frequencies relative to the amplitudes of the third set of frequencies. The fourth set of frequencies occurring at higher frequencies than the third set of frequencies.

Klayman and Bauer fail to teach these concepts; thus, Applicant respectfully submits that Claim 28 is patentably distinct, and Applicant respectfully requests allowance of Claim 28.

Claim 29

Claim 29 depends from Claim 28 and is believed to be patentable for the same reasons articulated above with respect to Claim 28, and because of the additional features recited therein.

Claim 30

Independent Claim 30 is of different scope than the other independent claims and Applicant requests the Examiner to separately evaluate the patentability of Claim 30 in light of the arguments set forth below.

In particular, Claim 30 is directed to a method for enhancing sound. The method comprises receiving at least a first input and a second input. The first and second inputs comprise a first set of bass components and a second set of frequencies that occur at other frequencies.

Claim 30 also comprises filtering the first set of bass components in the first and second inputs and spectrally shaping difference information in the first and second inputs, wherein spectrally shaping the difference information modifies the amplitudes of the second set of frequencies.

In addition, the method of Claim 30 comprises combining the spectrally shaped difference information with at least a portion of the first set of bass components filtered in the first input to generate an output. The output comprises the portion of the first set of bass components filtered in the first input and the spectrally shaped difference information.

Spectrally shaping the difference information further modifies the amplitudes of a third set of frequencies such that the amplitudes of the third set of frequencies are less than the amplitudes of the second set of frequencies. The third set of frequencies occurring at higher frequencies than the second set of frequencies.

Also, spectrally shaping the difference information further modifies the amplitudes of a fourth set of frequencies such that the amplitudes of the third set of frequencies are greater than the amplitudes of the third set of frequencies. The fourth set of frequencies occurring at higher frequencies than the third set of frequencies.

Because Klayman and Bauer, either alone or in combination, fail to teach these concepts, Applicant respectfully requests allowance of Claim 30.

Claim 31

Claim 31 depends from Claim 30 and is believed to be patentable for the same reasons articulated above with respect to Claim 30, and because of the additional features recited therein.

Double Patenting

The Office Action provisionally rejected Claims 27-31 on the grounds of non-statutory obviousness-type double patenting as being unpatentable over Claim 1 of co-pending Application No. 11/777,127 in view of Bauer.

Applicant has abandoned Application No. 11/777,127 to focus on the current application. Thus, this rejection is now moot.

NO DISCLAIMERS OR DISAVOWALS

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application.

Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution.

Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

OTHER APPLICATIONS OF ASSIGNEE

Applicant wishes to draw the Examiner's attention to the following applications of the present application's assignee.

Inventors	Serial No.	Filing Date	Attorney No.	Title of Invention
Klayman	08/430,751 Now Pat. No. 5,661,808	04/27/95	SRSLABS.053A	Stereo Enhancement System
Klayman	08/770,045 Now Pat. No. 5,892,830	12/19/96	SRSLABS.053C1	Stereo Enhancement System
Klayman	09/211,953 Now Pat. No. 6,597,791	12/15/98	SRSLABS.053C2	Stereo Enhancement System
Klayman	11/777,127 Now Abandoned	07/15/98	SRSLABS.053C4	Stereo Enhancement System

Applicant notes that cited references, office actions, responses and notices of allowance exist for the above-referenced matters. Applicant also understands that the Examiner has access to sophisticated online Patent Office computing systems that provide ready access to the full file histories of these matters including, for example, specifications, drawings, pending claims, cited art, office actions, responses, declarations, and notices of allowance.

Applicant respectfully requests that the Examiner continue to review these file histories for past and current information about these matters. Also, if the Examiner cannot readily access these file histories, the Applicant would be pleased to provide any portion of any of the file histories at any time upon specific Examiner request.

CONCLUSION

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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